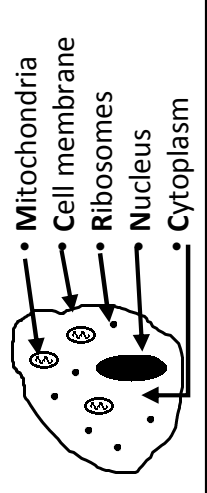
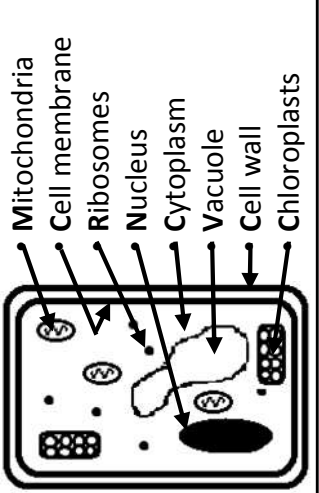


Key points to learn

1. Early light microscopes	Use light and lenses. Have magnifications of 100 to 2 000
2. Electron microscope	Modern. Use a beam of electrons. Magnifications of up to 2 000 000
3. Magnification	How much bigger an image appears than the real object eg Magnification of 100, image looks 100 times bigger than object $\text{magnification} = \frac{\text{size of image}}{\text{size of object}}$
4. Resolving power	Smallest size microscope can show
5. Typical Animal cell	
6. Typical Plant cell	
7. Photo-synthesis	Reaction plants use to make glucose from light, H ₂ O and CO ₂
8. Specialised animal cells	<ol style="list-style-type: none"> 1. Sperm – tail to swim 2. Nerve – carry electrical impulses 3. Muscle – contract and relax
9. Specialised plant cells	<ol style="list-style-type: none"> 1. Root hair - absorb water and ions 2. Xylem – carry water and minerals 3. Phloem – carry glucose to cells

Key points to learn

10. Mitochondria	Perform respiration to release energy
11 Cell membrane	Controls movement in/out of cell
12 Ribosomes	Makes proteins by protein synthesis
13 Nucleus	Controls activities of cell. Contains genes to build new cells
14 Cytoplasm	Liquid where most reactions happen
15 Vacuole	Sack filled with sap. Keeps cell rigid
16 Cell wall	Made of cellulose. Supports cell
17 Chloroplasts	Green and full of chlorophyll
18 Chlorophyll	Absorbs light for photosynthesis
19 Eukaryotic cells	Animal cells and plant cells. Have cell membrane, cytoplasm and nucleus
20 Prokaryotic cells	Bacteria. Do not have a nucleus. Genetic material is looped
21 Diffusion	<p>Particles spreading out in gas/liquid Move from high → low concentration</p> <p>Dissolved substances like O₂ and CO₂ move in/out of cells by diffusion</p> <ol style="list-style-type: none"> 1. Difference in concentration (concentration gradient) 2. Temperature 3. Surface area to diffuse through
22 Factors affecting diffusion	<p>Diffusion of water through partially permeable membrane (surface that only lets small particles through). Moves from dilute solution → more concentrated solution</p>
23 Osmosis	Moves substances from low → high concentration. Needs energy
24 Active transport	Moves substances from low → high concentration. Needs energy

Trilogy: B1 Cell structure and transport

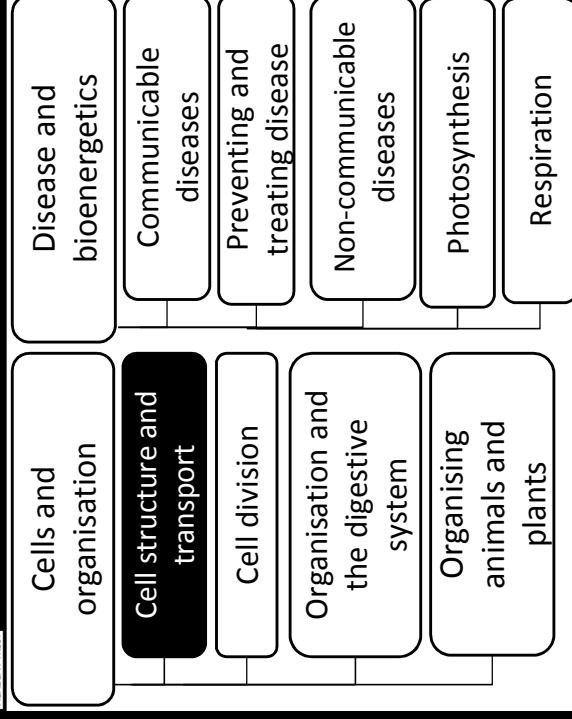
transport

Collins Revision Guide: Cell Biology

Knowledge Organiser



Big picture (Biology Paper 1)



Background

Big or small, all organisms are made of cells. Normally too small to see without a microscope, they are the building blocks of all life: animals, plants, insects, microbes and us.

Maths skills

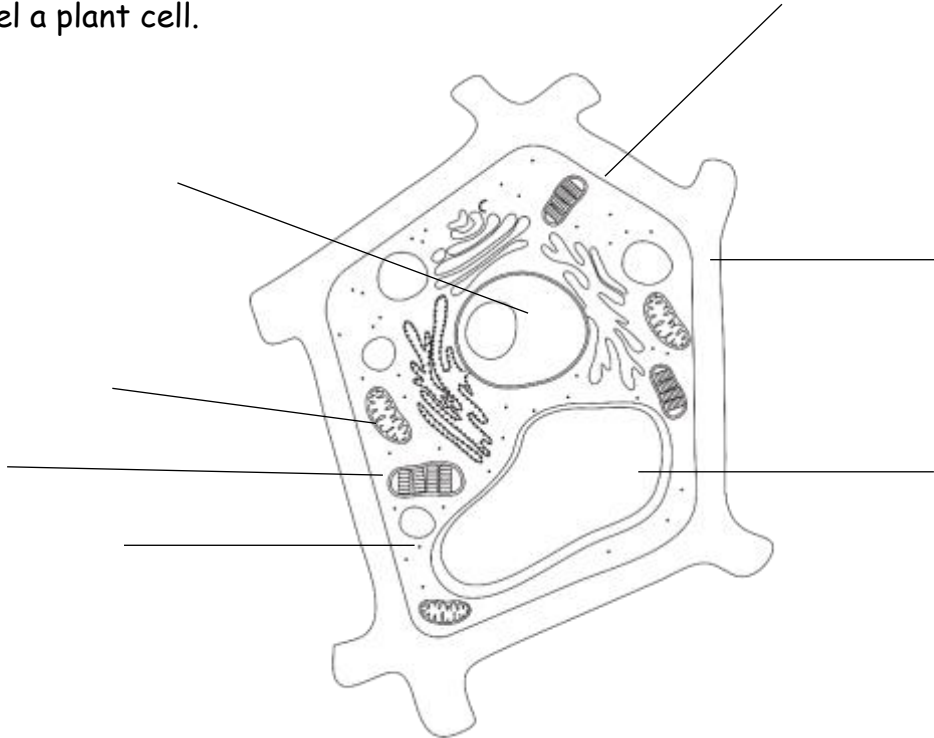
Prefix	Meaning	Standard form
Mega (M)	x 1000000	x 10 ⁶
kilo (k)	x 1 000	x 10 ³
milli (m)	÷ 1 000	x 10 ⁻³
nano (n)	÷ 1 000 000 000	x 10 ⁻⁹



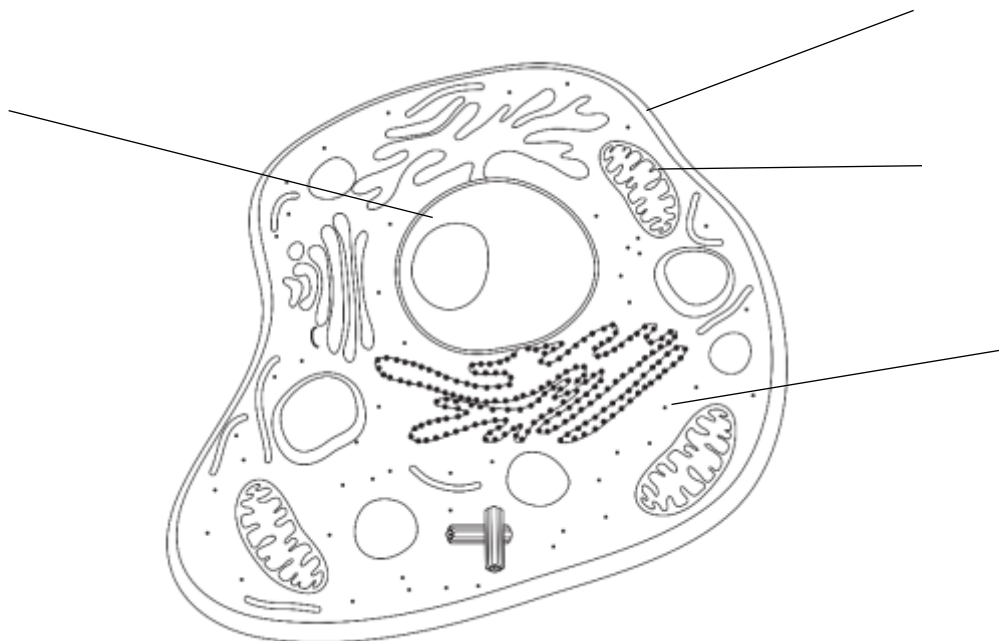
Quick fire questions;

This worksheet is fully supported by a video tutorial; <https://youtu.be/E9ZiTAArC-E>

1. Label a plant cell.

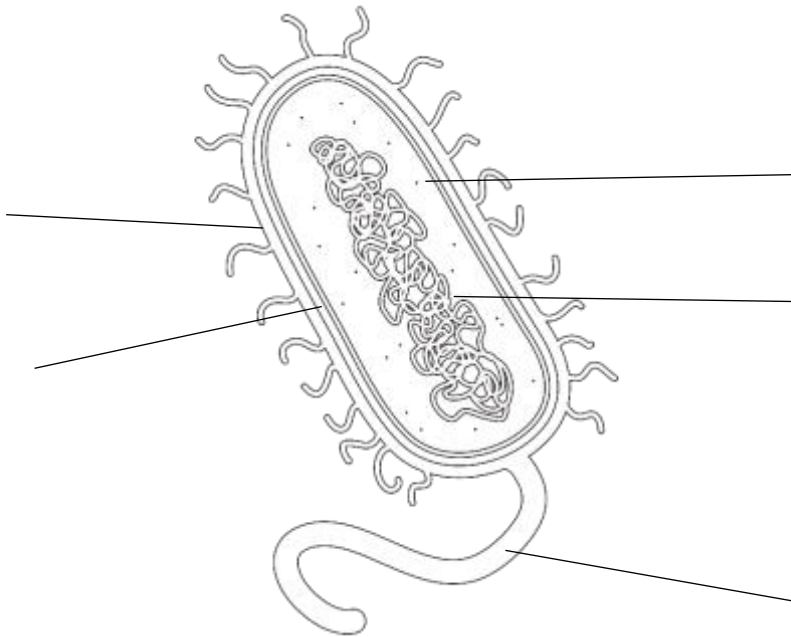


2. Label an animal cell.





3. Label a bacteria cell.



4. Give two different specialist cells.
5. What is differentiation?
6. How do you calculate magnification?
7. Where are chromosomes?
8. What do chromosomes do?
9. What is mitosis?
10. What is a stem cell?
11. What is diffusion?
12. What is osmosis?
13. What is active transport?